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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
BAYARD, EMMANUEL	
ART UNIT	**PAPER NUMBER**
2631	

DATE MAILED: 07/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/976,200	Applicant(s) BINSHTOK ET AL.	
	Examiner Emmanuel Bayard	Art Unit 2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 May 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This is in response to amendments filed on 5/10/04 in which claims 1-29 are pending. The applicant's amendments have been fully considered but they are moot based on the new ground of rejection therefore this case is made final.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-XXX are rejected under 35 U.S.C. 102(e) as being anticipated by Jasper et al U.S. patent No 6,201,955 B1.

As per claims 1, 10 and 15 Jasper discloses a method for reducing interference in a communication device comprising: providing a communication device having first and second antenna elements (see figs. 3, 6 elements 302, 304, 601) and a radio frequency combiner (see figs. 3, 6 elements 312, 603 and col.5, lines 28-33 and col.7, lines 39-40) to combine outputs of said first and second antenna elements, said first antenna element having an adjustable weight (see figs.3, 6 elements 306, 602 and col.5, lines 35-36 and col.7, lines 37-38); said communication device further having a single radio frequency receiver path to receive the combined outputs an produce a base band communication (see figs. 3, 6 elements 310, 604 and col.5, lines 34-35 and col.7, line 41); a spectrum analyzer to determining power calculation of adjacent channels and estimating spectral

analysis of the channel is the same as the (channel determining individual channel responses) (see figs.3, 6 elements 314, 605 and col.5, lines 48-65 and col.8, lines 13-45) for said first and second antenna elements for each of a plurality of base stations of interest at the base band communication signal; and determining a weight for said first antenna element that optimizes an interference-related quality criterion based on said individual channel responses (see abstract and col.6, lines 58-67 and col.7, lines 45-67 and col.8, lines 4-11) using phased array principles to direct a receive beam.

As per claim 2, Jasper does teach said communication device includes more than two antenna elements (see figs.3, 6), wherein said combiner combines the outputs of said more than two antenna elements.

As per claim 3, Jasper does teach determining individual channel responses includes: applying a predetermined weight (306) to said first antenna element; estimating a combined channel response (314) for a channel between a first base station of interest and an output of said combiner while said predetermined weight is being applied; and calculating an individual channel response for a channel between said first base station of interest and said first antenna element using said estimated combined channel response (see abstract and col.6, lines 58-67 and col.7, lines 45-67 and col.8, lines 4-11 and see figs.3, 6 elements 314, 605 and col.5, lines 48-65 and col.8, lines 13-45).

As per claim 4, Jasper does teach calculating an individual channel response includes determining a weight previously applied to said first antenna element and using said previously applied weight to calculate said individual channel response (see figs.3, 6 and col.5,lines 48-67 and col.6, lines 53-67).

As per claim 5, Jasper does teach: said weight is a complex weight having a magnitude-related component and a phase-related component (see col.4, lines 53-55).

As per claims 6, 14, 21 Jasper does teach said interference-related quality criterion includes a signal to interference and noise ratio (SINK) (see abstract).

As per claim 7, Jasper inherently teaches said interference-related quality criterion includes a bit error rate (BER).

As per claim 8, Jasper does teach said interference-related quality criterion includes a mean square error (MSE) (see col.3, lines 1-20)

As per claim 9, Jasper inherently teaches determining a weight includes selecting a weight from a predefined set of possible weights.

As per claim 11, 16, Jasper does teach repeating estimating a combined channel response and calculating individual channel responses for each of a plurality of base stations of interest (see figs 3, 6 and feedback).

As per claim 12, Jasper inherently teaches estimating a combined channel response includes identifying and using a pilot signal received from said first base station of interest.

As per claim 13, Jasper inherently teaches applying a predetermined weight includes forcing a magnitude associated with said first antenna element to zero.

As per claims 17, 18, Jasper inherently teaches calculating individual channel responses include using antenna weight information from a previous time period.

As per claim 19, Jasper inherently teaches calculating individual channel responses includes solving M equations in M unknowns, where M is an integer greater than 1.

As per claim 20, Jasper inherently teaches calculating individual channel responses includes solving the following system of equations for C1(t=nT): h, (t) = WC, (t) t E [nT, nT + I

hl (t) = W(n,)TC, (t) t E [(n -1)T +I, nT) where hl(t) is the estimated combined channel response for the first base station of interest at time t, W(„_I)T is the calculated vector gain of the antenna elements during previous period [(n-1)T+z , nT), C1(t) is the matrix channel response of the first base station of interest for each of the antenna elements at time t, and W is the vector gain of the antennas using the predetermined weight.

As per claim 22, Jasper inherently teaches repeating applying a predetermined weight, estimating a combined channel response, calculating individual channel responses, determining a new weight, and applying said new weight for a subsequent time period.

As per claim 24, Jasper does teach at least one additional antenna element (see figs.3, 6), wherein said combiner combines outputs of said first antenna element, said second antenna element, and said at least one additional antenna element to generate said combined signal and wherein said first unit determines individual channel responses for said first antenna element, said second antenna element, and said at least one additional antenna element for each of the base stations of interest.

As per claim 25 , Jasper teaches said controller (see fig.3 element 316) repeatedly updates said weight of said first antenna element..

As per claim 26, Jasper inherently teaches said controller updates said weight of said first antenna element at intervals that depend upon a Doppler rate associated with said communication device.

As per claim 27, Jasper does teach interference-related quality criterion includes a signal to interference and noise ratio (SINR) (see abstract).

As per claim 28, Jasper inherently teaches first unit regularly applies a predetermined weight to said first antenna element for use in determining said individual channel responses .

As per claim 29, Jasper inherently teaches said first unit determines said individual channel responses for said first and second antenna elements using a combined channel response for said first and second antenna elements for each base station of interest.

Conclusion

3. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Miyahara U.S. Patent No 6,449,469 B1 teaches a switched directional antenna for automotive radio receivers.

Kasami et al U.S. Patent No 6,400,318 B1 teaches an adaptive array antenna.

Ohira et al U.S. Patent No 6,407,719 B1 teaches an array antenna.

Ling et al U.S. Patent No 6,172,970 B1 teaches a low-complexity antenna diversity.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel Bayard whose telephone number is (703) 308-9573. The examiner can normally be reached on Monday-Thursday from 8:00 AM - 5:30 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour , can be reached on (703) 306-3034. The fax phone number for this Group is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3800.

Emmanuel Bayard

Primary Examiner

July 22, 2004

EMMANUEL BAYARD
PRIMARY EXAMINER